

US PTO Cust. No. 25280

Case No. 2102REI

AMENDMENT**IN THE TITLE:**

Replace the title with the following:

--AIRBAG FABRIC POSSESSING VERY LOW COVER FACTOR--

IN THE SPECIFICATION:

The first full paragraph in column 3 has been amended to read:

--To achieve these and other objects and in accordance with the purpose of the invention, as embodied and broadly described herein, the present invention provides an airbag fabric for incorporation within an airbag cushion comprising a woven fabric substrate, at least a portion of which is coated or laminated, wherein said woven fabric substrate has a cover factor below about 1900, preferably below about 1775, more preferably below about 1750, and most preferably, for laminated fabric, below about 1600, and wherein the air permeability of said airbag fabric is less than about 0.5 cfm under 124 Pa pressure at about 25°C. The utilization of a coating or laminate (i.e., film) provides the desired low degree of air permeability over the covered portion of the airbag fabric. In this instance, the term "laminate" is intended to encompass a continuous film which is bonded to the fabric structure through the utilization of a bonding agent. Thus, such a bonding agent may be applied first to the fabric surface and then covered by the laminate. Or, the bonding agent may be incorporated on the side of the laminate which is to be in contact with the fabric surface. The film structure of the laminate thus differs significantly from the standard airbag coatings

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previously used in such applications since the laminate is continuous, must be adhered to the surface through the utilization of such a bonding agent, and is applied to the fabric as a film. Coatings generally are applied through a method in which the coating material is of very high viscosity (i.e., from about 10,000 to about 100,000 centipoise at 1 atmosphere and 25°C) and applied by a standard coating mechanism (such as a knife coater). Such coatings would only be applied to fabric substrates which possess cover factors of between 1600 and 1900 since, even though the viscosities of such coatings would be extremely high and thus allow for maximum adhesion to the individual yarns, the spaces between such yarns would be too voluminous to permit sufficient, continuous filling of such spaces too provide the necessary air permeability of fabric substrates possessing densities below about 1600.--

The second full paragraph in column 4 has been amended to read:

--The general method followed in adhering the laminate to the target airbag fabric surface comprises coating the fabric with the bonding agent; laminating the desired film to at least a portion of the treated fabric by running the fabric through a heated nip roll including the to-be-applied film; and heating the resultant composite to a bonding temperature of between about 270 and 450°F; more preferably from about 290 to about 400°F; most preferably from about 300 to about 350°F. This high temperature effectuates the desired bonding of the film to the fabric surface through the melting of the film materials which then deform to meet the contours and dimensions of the fabric surface. Upon cooling the adhered, deformed film retains its structural integrity as a laminate over the entire treated fabric surface, which fills the spaces between the loosely packed yarns. The laminate is flexible

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enough to permit sufficient inflation upon a collision event to provide a cushion to a passenger or driver; however, the film also exhibits a rigidity over the individual yarns such that the yarns do not much appreciably from their set woven pattern. As such, the laminate, in filling the interstitial spaces between the yarns as well as preventing movement of the yarns from their set pattern, thus provides the airbag fabric (and consequently the airbag cushion) with a remarkably reliable manner of reducing air permeability through the fabric structure. Such a novel procedure thus accords the artisan with a manner of utilizing inexpensively produced fabric exhibiting a low cover factor (below about 1900) to produce an effective airbag fabric and cushion for utilization within a vehicle restraint system.--

IN THE CLAIMS:

1.(Amended) An airbag fabric for incorporation within an airbag cushion comprising a woven fabric substrate, at least a portion of which is adhered to a film, wherein said woven fabric has a cover factor below about 1900, and wherein the air permeability of said airbag fabric is less than about 0.5 cfm under 124 Pa pressure at about 25°C.

2.(Amended) The airbag fabric of claim 1 wherein said woven fabric substrate is adhered to a film comprising materials selected from the group consisting of polyurethane, polyacrylate, polyamide, polyester, and copolymers thereof.